

Amendments to the Specification

The paragraph starting at page 1, line 14 and ending at line 16 has been amended as follows.

In recent years, color liquid crystal displays ~~of color display~~ have been grown in demand due to advancement of personal computers.

The paragraph starting at page 4, line 11 and ending at page 5, line 4 has been amended as follows.

~~A~~ In a liquid crystal display device ~~of performing that performs~~ color display in plane sequential mode, no problems arise when a static image is displayed, but, for example, in display of dynamic images in which a white image (image represented with two or more of R, G and B colors) moves on the screen, ~~the~~ a "color sequential artifact" (hereinafter abbreviated as "CSA"), in which coloring occurs before and after movement of the dynamic image due to time difference among R, G and B fields, occurs. Also, conversely, the color sequential artifact (CSA) similarly occurs when the line of an observer's sight is shifted. This situation is schematically shown in FIGS. 12A and 12B. In FIGS. 12A and 12B, reference numeral 121 denotes the line of an observer's sight, reference characters n and n+1 denote any sequential frames, reference character ΔX denotes the amount of movement of the dynamic image from the n frame to the n+1 frame, and reference character t denotes time.

The paragraph starting at page 5, line 27 and ending at page 6, line 10 has been amended as follows.

For a method of preventing the color sequential artifact, there is a method in which the field frequency is increased, in the first place. However, for example, if horizontal and vertical scan frequencies are increased by two times compared to the conventional frequencies (the field frequency is increased to a sixfold-speed), for example, power consumption is increased due to enhancement of the speed of data transfer, the speed of response by the liquid crystal is reduced to provide only poor display, and so on, thus ~~rising~~ causing other problems to arise.

The paragraph starting at page 10, line 5 and ending at line 19 has been amended as follows.

Similarly, when the white image is displayed with a RGBW system constituted by four fields of R, G and B fields plus a W field, brightness signals inputted in the liquid crystal display part are all used as display information of the W field, and therefore their transmittance is 0 % in each of R, G and B fields and the white image is displayed with the brightness signal having the maximum transmittance only in the W field. On the other hand, for the light source, the R light source is lit twice covering the R field and W field, and similarly other light sources have their lighting time periods increased by two times. Thus, as shown in FIG. 16, ~~it is observed that~~ brightness

corresponding to each of R, G and B light sources being lit for the time period corresponding to $1/4$ of one frame is observed.

The paragraph starting at page 10, line 20 and ending at page 11, line 8 has been amended as follows.

Therefore, if brightness levels of R, G and B light sources in ~~FIGS~~ FIGS. 15 and 16 are the same, the brightness for the RGBW system is $3/4$ of the brightness for the RGB system when the brightness for the RGB system and the brightness for the RGBW system are compared with each other. Also, for the time period over which each light source is lit in each frame, each of R, G and B light sources is lit for the time period corresponding to $1/3$ of one frame for the RGB system, while each of the light sources is lit for the time period corresponding to $1/2$ of one frame for the RGBW system, and therefore power consumption of the light source for the RGBW system is 1.5 times larger than that for the RGB system. As a result, efficiency of light usage for the RGBW system is reduced by $1/2$ in comparison with that for the RGB system.

The paragraph starting at page 13, line 3 and ending at line 7 has been amended as follows.

The present invention is particularly intended to improve the above-described conventional examples, and is to reduce power consumption of light-sources

while inhibiting the color sequential artifact at the time of performing display by four fields of R, G, B and W.

The paragraph starting at page 14, line 5 and ending at line 6 has been amended as follows.

The second embodiment of the present invention performs the following processing.

The paragraph starting at page 15, line 8 and ending at line 14 has been amended as follows.

4) The above-described proportion S of the brightness level of the white signal displayed in the W field is set to a large value when quick motion is displayed in an image of high ~~bright~~ brightness, which can cause a color sequential artifact, and conversely, the above-described proportion is set to a small value when a static image is displayed.

The paragraph starting at page 18, line 3 and ending at line 17 has been amended as follows.

The liquid crystal display device comprises a liquid crystal display part, light sources having three primary colors and generating on a white color by mixture thereof, namely R, G and B light sources, specified means for converting an inputted color image signal into a signal for driving a liquid crystal panel, and means for controlling the brightness of the light sources. The liquid crystal display part for use in the present invention is a monochrome display panel having no color filters, and may be any liquid crystal element of high speed response such as a conventional twisted nematic liquid crystal element and a ferroelectric liquid crystal. Also, it is not limited to the liquid crystal element, and may be a light-receiving type and projection type display element.

The paragraph starting at page 20, line 19 and ending at line 25 has been amended as follows.

Furthermore, because the brightness signal for television has each of R, G and B digital signals subjected to gamma (γ) correction, it is more preferable that the proportion of W digital signal to be displayed is set after γ is made to equal 0, but this is not described herein because this processing is complicated.

The paragraph starting at page 25, line 4 and ending at page 26, line 10 has been amended as follows.

FIG. 3 is a timing chart when the above-described proportion S is 50% in a gradation level display frame similar to that in FIG. 2. Lighting timings of the R, G and B light sources are the same as those in FIG. 2, but the emission intensity of each of the R, G and B light sources in the W field is set so that the maximum brightness 100% is multiplied by the proportion 50% to obtain white display of 50 % brightness level. Also, display information to the liquid crystal panel in the W field represents 100% gradation level \times the above-described proportion 50% \times the inverse of the above- described proportion 50% = 100%, and as a result, display information is given so that 50% brightness is provided. On the other hand, for display information given to the liquid crystal display part in the R, G and B fields, since 50% of the white color signal is displayed in the W field, a signal with the brightness level corresponding to the 50% gradation level subtracted from each of the original R, G and B color signals is given. Therefore, display information of the liquid crystal display part represents 50%, and by irradiation of light from each of R, G and B light sources lit in the emission intensity of 100%, a 50% gradation level is displayed. In terms of one frame unit, the same amount of light as that of FIG. 2 is transmitted. The time period over which each of the R, G and B light sources is lit is 1/2 of one frame and is not different from that of FIG. 2, but since each color light source is lit in the emission intensity of 50% in the W field, power consumption is 3/8 of the power consumption at the time of maximum lighting when respective color light sources are lit in all the fields, and is 3/4 of the power consumption when the above-described proportion is 100%.

The paragraph starting at page 28, line 27 and ending at page 29, line 7 has been amended as follows.

In FIG. 7, because the above-described proportion is 100%, 100% of display information is given to the liquid crystal display part with the emission intensity of the light source in the W field being 50%. A situation is shown in which display information given to the liquid crystal display part becomes 0% in the R, G and B fields, and white color information corresponding to Wmax 50% is obtained in the W field.

The paragraph starting at page 30, line 3 and ending at line 15 has been amended as follows.

In the above-described embodiment, the dynamic image/brightness detection circuit is used as means for setting the above-described proportion, but a proportion modulation switch 51 may be provided to make an adjustment as shown in FIG. 9. Specifically, for example, three levels may be set such that the level at which the above-described proportion equals 100% corresponds to a color sequential artifact prevention mode, the level at which ~~the~~ it equals 50% corresponds to a color sequential power saving mode, and the level at which it equals 0% corresponds to a power saving mode, allowing a user to switch the modes when the device is used.